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(19) **United States**(12) **Patent Application Publication****Hasel et al.**(10) **Pub. No.: US 2012/0124964 A1**(43) **Pub. Date: May 24, 2012**(54) **GAS TURBINE ENGINE WITH IMPROVED FUEL EFFICIENCY****Publication Classification**(51) **Int. Cl.**
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(52) **U.S. Cl.** **60/204; 60/226.3**(57) **ABSTRACT**

A turbofan engine includes a fan driven by a low pressure turbine through a gear reduction. The gear reduction has a gear ratio of greater than or equal to about 2.4. The low pressure turbine has an expansion ratio greater than or equal to about 5. The fan has a bypass ratio greater than or equal to about 8. In other features, a turbofan engine includes a variable geometry fan exit guide vane (FEGV) system having a multiple of circumferentially spaced radially extending fan exit guide vanes. Rotation of the fan exit guide vanes between a nominal position and a rotated position selectively changes a fan bypass flow path to permit efficient operation at various flight conditions.

(76) Inventors: **Karl L. Hasel**, Manchester, CT (US); **Peter G. Smith**, Wallingford, CT (US); **Stuart S. Ochs**, Manchester, CT (US)(21) Appl. No.: **13/361,987**(22) Filed: **Jan. 31, 2012****Related U.S. Application Data**

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